MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2015/2016

TDB2121 – DATABASE DESIGN AND MANAGEMENT

(All sections / Groups)

16 OCTOBER 2015
9:00 a.m. – 11:00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 6 pages with 6 Questions only, excluding cover page.
2. Answer **ALL** questions in **PART A**, and answer **ANY TWO** questions in **PART B**. **PART A** carries **30** marks. **PART B** carries **20** marks.
3. Please write all your answers in the Answer Booklet provided.

PART A – ANSWER ALL

QUESTION 1

a) Explain why database design is important.

[3 marks]

b) List any FOUR activities involved in data model verification.

[2 marks]

c) What is entity integrity?

[2 marks]

d) Using the AGENT and CUSTOMER tables shown below, illustrate the differences among an inner join, left outer join and full outer join.

AGENT Table

Agent_ID	Agent_Name
1001	James
1050	Smith
1304	Ali

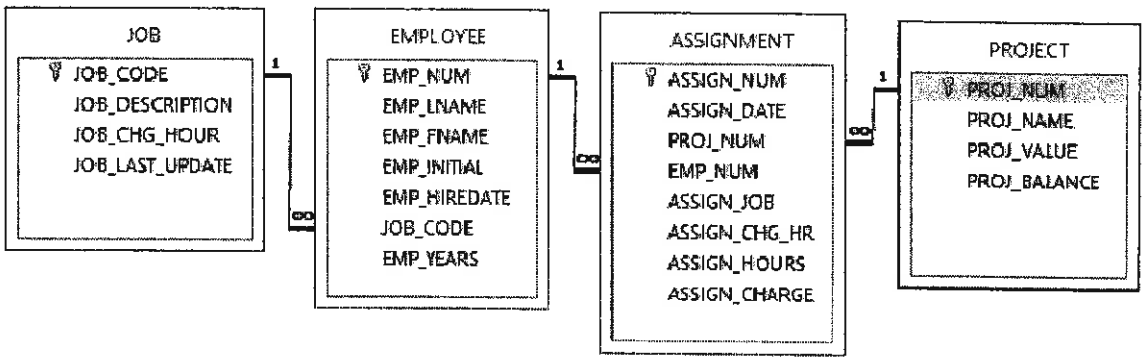
CUSTOMER Table

Cust_ID	Cust_Name	Agent_ID
8001	Peter	1050
8402	Mary	1001
8623	Charles	1320
8333	Kumar	1307

[3 marks]

QUESTION 2

The following is a relational diagram consisting of four tables. Each primary key is labeled with a key symbol.



a) Write a SQL command to add a new column named PROJ_DESC that can store up to 200 characters in the PROJECT table.

[1 mark]

b) Assume a table SENIOR_EMP is created to store senior employees' details with attributes EMP_NUM, EMP_LNAME and EMP_YEARS. The company policy states that any employee who works for over 20 years shall be considered a senior employee.

Write SQL command to copy the senior employee data from the EMPLOYEE table to the SENIOR_EMP table.

[2 marks]

c) Write SQL command to list the project number, project name, employee last name and job charges per hour for any project(s) having a balance more than 5000 dollars and the project assignment date is between 12 May 2014 and 10 Jun 2015.

[2 marks]

d) Create a view named EMP_1 using the EMPLOYEE table that contains only the employee name (combine EMP_LNAME and EMP_FNAME) with job code equal to XMKA.

[2 marks]

e) Write a SQL trigger named TRIG_1 to check whether the project balance (PROJ_BALANCE) is enough to pay for the charges before a project is assigned to the employee. The charge is calculated as ASSIGN_HOURS × ASSIGN_CHARGE. The trigger shall return a message "Insufficient balance!" if the project balance is not enough.

[3 marks]

QUESTION 3

a) In the advent of information technology, companies highly rely on their day-to-day data and information to make decision. Explain what is data quality and why is it important to an organization?

[2 marks]

b) John is just hired by a multi-national company to work as the Database Administrator (DBA). He is responsible to manage all the technical aspect of the databases in the company.

Provide FOUR technical roles that John has to undertake to ensure the databases system in the company are secured and well managed.

[4 marks]

c) Protecting data security, privacy, and integrity are important database functions. Which activities are required in the DBA's managerial role for enforcing these functions?

[2 marks]

d) What are the tools can be used in database administration?

[2 marks]

PART B – ANSWER ANY TWO

QUESTION 4

a) Your data warehousing project group is debating whether to create a prototype of the data warehouse before its implementation. The project group members are especially concerned about the need to acquire some data warehousing knowledge and skill before implementing the enterprise-wide data warehouse.

What would you recommend? Explain your recommendations.

[4 marks]

b) What are decision support systems, and what role do they play in the business environment?

[2 marks]

c) A XYZ Corporation relies on the data and information supplied by the following dimension tables to run its daily production and operational businesses.

- Product(**ProdID**, ProdDescription, ProdPrice, ProdQuantity)
- Factory(**FacCode**, FacName, FacCity, FacRegion, FacCountry)
- Sales(**SaleID**, SaleCity, SaleRegion, SaleCountry, SaleYear)
- Order(**OrderID**, OrderYear, OrderMonth, OrderDay, OrderQuantity)
- Supplier(**SupID**, SupName, SupRegion, SupOutput)

The company would like to forecast the demand of the products for the next quarter. The identified fact table is Production which should provide detail for each product to be produced.

Design and illustrate a star schema for XYZ Corporation.

[4 marks]

QUESTION 5

a) What are the THREE basic components of a ODBC architecture?

[3 marks]

b) In a Microsoft ActiveX Data Object (ADO.Net) framework, list FOUR objects in the data providers that provides data communication and manipulation between the client application and the database via OLE-DB.

[2 marks]

c) What are the purposes of document type definition (DTD)?

[2 marks]

d) Consider the following Plant table.

PlantID	PlantName	PlantPrice
2015	Apocynum cannabinum	150.00
2020	Anemone japonica	270.00
2050	Potamogeton	1050.00

Convert the table into XML version 1.0 representation.

[3 marks]

QUESTION 6

a) Object-oriented database management system (OODBMS) is relatively new and not many database developers are willing to use OODBMS to design their database system.

Provide THREE factors that affect the usage of OODBMS.

[3 marks]

b) What is inheritance? Explain TWO types of inheritances in OODDMS.

[3 marks]

c) What are the differences between Object-Oriented Data Model (OODM) with Entity-Relationship (ER) Model?

[4 marks]